

SEQUENCE LISTING

<110> Graham and Tonon

<120> Transgenic Cells

<130> 72576-01

<150> PCT/GB04/003057

<151> 2004-07-13

<150> 0316629.5

<151> 2003-07-16

<160> 19

<170> PatentIn version 3.1

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<213> Thalassiosira

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ttcccgtaga gaaataatgg tctcgttaaa ttagttataa tcttaaacaa tttagtggtc 180

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ccactattac gagtttcacc tcaggtcctg accggcaaaa acaattgaat cagcagcaaa	1740
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1828

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 <212> PRT
 <213> Thalassiorsira

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Gly Leu Gly Val His Tyr Ala Glu Phe Ser Cys Leu His Pro Leu Leu
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Gly Ala Thr Tyr Leu Pro Phe Glu Arg Phe Tyr Asp Pro Val Ala Thr
 35 40 45

Leu Thr Trp Met Gln Asp Arg Pro Met Ile Pro Ile Ile Ala Cys Val
 50 55 60

Ala Tyr Val Val Leu Ile Val Leu Gly Arg Ala Tyr Met Lys Asp Arg
 65 70 75 80

Pro Ala Trp Ser Trp Arg Arg Ile Leu Ala Val Trp Asn Leu Ser Leu
 85 90 95

Ser Leu Phe Ser Trp Ile Gly Ala Ile Arg Thr Ala Pro Gln Leu Tyr
 100 105 110

Tyr Asn Leu Thr Thr Tyr Ser Leu Arg Asp Asn Leu Cys Asp Asp Pro
 115 120 125

Ala Ala Leu Tyr Gly Ser Gly Ser Thr Gly Leu Trp Val Gln Leu Phe
 130 135 140

Ile Leu Ser Lys Phe Pro Glu Leu Leu Asp Thr Phe Phe Ile Val Ile
 145 150 155 160

His Lys Lys Pro Leu Ile Phe Leu His Trp Tyr His His Ile Thr Val
 165 170 175

Leu Leu Tyr Cys Trp His Ser Tyr Val Thr Thr Ser Pro Ser Gly Leu
 180 185 190

Phe Phe Val Val Met Asn Tyr Ser Val His Ala Val Met Tyr Gly Tyr
 195 200 205

Tyr Phe Leu Met Ala Val Lys Phe Arg Pro Lys Trp Phe Asn Pro Met
 210 215 220

Phe Val Thr Phe Met Gln Leu Ser Gln Met Phe Ile Gly Val Gly Val
 225 230 235 240

Thr Ile Val Ala Phe Tyr Tyr Tyr Ser Asn Pro Ile Leu Gly Lys Thr
 245 250 255

Cys His Ile Arg Lys Glu Asn Asn Val Ala Ala Phe Val Met Tyr Gly
 260 265 270

Ser Tyr Phe Tyr Leu Phe Ala Gln Phe Phe Val Ala Arg Tyr Tyr Lys
 275 280 285

Val Lys Val Lys Gly Asp Ala Lys Lys Lys Lys Val Val
 290 295 300

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Ala Met Asp Pro Tyr Pro Ile Lys Phe Leu Tyr Asn Val Ser Gln Ile		
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Phe Leu Cys Ala Tyr Met Thr Val Glu Ala Gly Phe Leu Ala Tyr Arg		
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Asn Gly Tyr Thr Val Met Pro Cys Asn His Phe Asn Val Asn Asp Pro		
65	70	75
Pro Val Ala Asn Leu Leu Trp Leu Phe Tyr Ile Ser Lys Val Trp Asp		
85	90	95
Phe Trp Asp Thr Ile Phe Ile Val Leu Gly Lys Lys Trp Arg Gln Leu		
100	105	110
Ser Phe Leu His Val Tyr His His Thr Thr Ile Phe Leu Phe Tyr Trp		
115	120	125
Leu Asn Ala Asn Val Leu Tyr Asp Gly Asp Ile Phe Leu Thr Ile Leu		
130	135	140
Leu Asn Gly Phe Ile His Thr Val Met Tyr Thr Tyr Tyr Phe Ile Cys		
145	150	155
Met His Thr Lys Asp Pro Lys Thr Gly Lys Ser Leu Pro Ile Trp Trp		
165	170	175
Lys Ser Ser Leu Thr Ala Phe Gln Leu Leu Gln Phe Thr Ile Met Met		
180	185	190
Ser Gln Ala Thr Tyr Leu Val Phe His Gly Cys Asp Lys Val Ser Leu		
195	200	205
Arg Ile Thr Ile Val Tyr Phe Val Tyr Ile Leu Ser Leu Phe Phe Leu		
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Phe Ala Gln Phe Phe Val Gln Ser Tyr Met Ala Pro Lys Lys Lys Lys		
225	230	235
Ser Ala		

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Val Gly Ala Ala Leu His Ser Gly Ser Ser Tyr Ala Val Trp Val His
 35 40 45

Tyr Cys Asp Lys Tyr Leu Glu Phe Phe Asp Thr Tyr Phe Met Val Leu
 50 55 60

Arg Gly Lys Met Asp Gln Val Ser Phe Leu His Ile Tyr His His Thr
 65 70 75 80

Thr Ile Ala Trp Ala Trp Trp Ile Ala Leu Arg Phe Ser Pro Gly Gly
 85 90 95

Asp Ile Tyr Phe Gly Ala Leu Leu Asn Ser Ile Ile His Val Leu Met
 100 105 110

Tyr Ser Tyr Tyr Ala Leu Ala Leu Leu Lys Val Ser Cys Pro Trp Lys
 115 120 125

Arg Tyr Leu Thr Gln Ala Gln Leu Leu Gln Phe Thr Ser Val Val Val
 130 135 140

Tyr Thr Gly Cys Thr Gly Tyr Thr His Tyr Tyr His Thr Lys His Gly
 145 150 155 160

Ala Asp Glu Thr Gln Pro Ser Leu Gly Thr Tyr Tyr Phe Cys Cys Gly
 165 170 175

Val Gln Val Phe Glu Met Val Ser Leu Phe Val Leu Phe Ser Ile Phe
 180 185 190

Tyr Lys Arg Ser Tyr Ser Lys Lys Asn Lys Ser Gly Gly Lys Asp Ser
 195 200 205

Lys Lys Asn Asp Asp Gly Asn Asn Glu Asp Gln Cys His Lys Ala Met
 210 215 220

Lys Asp Ile Ser Glu Gly Ala Lys Glu Val Val Gly His Ala Ala Lys
 225 230 235 240

Asp Ala Gly Lys Leu Val Ala Thr Ala Ser Lys Ala Val Lys Arg Lys
 245 250 255

Gly Thr Arg Val Thr Gly Ala Met
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Leu Thr Ile Val Gly Asp Ala Val Tyr Asp Ala Lys Ala Phe Arg Asp
 35 40 45

Glu His Pro Val Gly Ala His Phe Val Ser Leu Phe Gly Gly Arg Asp
 50 55 60

Ala Thr Glu Ala Phe Met Glu Tyr His Arg Arg Thr Trp Pro Lys Ala
 65 70 75 80

Arg Met Ser Lys Phe Phe Val Gly Ser Leu Asp Ala Ser Glu Lys Pro
 85 90 95

Thr Gln Ala Asp Ser Ala Tyr Leu Arg Leu Cys Ala Glu Val Asn Ala
 100 105 110

Leu Leu Pro Lys Gly Ser Gly Gly Phe Ala Pro Pro Ser Tyr Trp Leu
 115 120 125

Lys Ala Ala Ala Leu Val Val Ala Ala Val Ser Ile Glu Gly Tyr Met
 130 135 140

Leu Leu Arg Gly Lys Thr Leu Leu Leu Ser Val Phe Leu Gly Leu Val
 145 150 155 160

Phe Ala Trp Ile Gly Leu Asn Ile Gln His Asp Ala Asn His Gly Ala
 165 170 175

Leu Ser Arg His Ser Val Ile Asn Tyr Cys Leu Gly Tyr Ala Gln Asp
 180 185 190

Trp Ile Gly Gly Asn Met Val Leu Trp Leu Gln Glu His Val Val Met
 195 200 205

His His Leu His Thr Asn Asp Val Asp Ala Asp Pro Asp Gln Lys Ala
 210 215 220

His Gly Val Leu Arg Leu Lys Pro Thr Asp Gly Trp Met Pro Trp His
 225 230 235 240

Ala Leu Gln Gln Leu Tyr Ile Leu Pro Gly Glu Ala Met Tyr Ala Phe
 245 250 255

Lys Leu Leu Phe Leu Asp Ala Leu Glu Leu Leu Ala Trp Arg Trp Glu
 260 265 270

Gly Glu Lys Ile Ser Pro Leu Ala Arg Ala Leu Phe Ala Pro Ala Val
 275 280 285

Ala Cys Lys Leu Gly Phe Trp Ala Arg Phe Val Ala Leu Pro Leu Trp
 290 295 300

Leu Gln Pro Thr Val His Thr Ala Leu Cys Ile Cys Ala Thr Val Cys
 305 310 315 320

Thr Gly Ser Phe Tyr Leu Ala Phe Phe Phe Ile Ser His Asn Phe
 325 330 335

Asp Gly Val Gly Ser Val Gly Pro Lys Gly Ser Leu Pro Arg Ser Ala
340 345 350

Thr Phe Val Gln Arg Gln Val Glu Thr Ser Ser Asn Val Gly Gly Tyr
355 360 365

Trp Leu Gly Val Leu Asn Gly Gly Leu Asn Phe Gln Ile Glu His His
370 375 380

Leu Phe Pro Arg Leu His His Ser Tyr Tyr Ala Gln Ile Ala Pro Val
385 390 395 400

Val Arg Thr His Ile Glu Lys Leu Gly Phe Lys Tyr Arg His Phe Pro
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Thr Val Gly Ser Asn Leu Ser Ser Met Leu Gln His Met Gly Lys Met
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Gly Thr Arg Pro Gly Ala Glu Lys Gly Gly Lys Ala Glu
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682

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<211> 125
<212> PRT
<213> Pavlova lutherii

<400> 11

Ala Arg Gly Cys Cys Tyr Leu Leu Tyr Val Ser Leu Gly Ser Met Tyr
1 5 10 15

Ile Phe Cys Asn Phe Ala Val Ser His Thr His Leu Pro Ile Val Glu
20 25 30

Ala Asp Gln His Ala Thr Trp Val Glu Tyr Ser Ala Asn His Thr Thr
35 40 45

Asn Cys Ala Pro Ser Trp Trp Cys Asp Trp Trp Met Ser Tyr Leu Asn
50 55 60

Tyr Gln Ile Glu His His Leu Phe Pro Ser Met Pro Gln Phe Arg His
65 70 75 80

Pro Thr Ile Ala Pro Arg Val Lys Ala Leu Phe Glu Lys His Gly Leu
85 90 95

His Tyr Asp Val Arg Gly Tyr Phe Glu Ala Met Ala Asp Thr Phe Met
100 105 110

Asn Leu Asp Lys Val Gly Asn Ala His Glu His Asn His
115 120 125

<210> 12
<211> 1340
<212> DNA
<213> Pavlova lutherii

<400> 12

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ggtcgctgtc gcatgatggt cgccggtcc gcgcccctct ccgccgacgt gcagaagttt 180
gtgcaatcgt gttcaacgc gccgcttcgc caaggctacg gcctcaccga gacgtgcgcg 240
gcgacgacgc tctgcgcgct gcacgacaac acgccgtcgc aagttgggcc gccgcaggag 300

tcggcgtgca tcacgtctgcg cgactgggag gagggcaact accgcaaccg cgacgccaac 360
 gacccggcca tcgggatgcg gcgcggcgag atcctgatcg gtgggcccgc cgtctgcctc 420
 ggctactacg tgaacgagcg cgcgcccgcg gcggacgtgg tgaagcgcaa cgcggaggac 480
 tttgtgacga tcaacggcat gcgcttcttc tgctcgggag acatcggcca gatcacgccg 540
 agcggctgcg tgcagattat cgaccggaag aaggacctcg tcaagctgca gcagggcgag 600
 tacgtcgcgc tctccaaggt ggagaacgcg ctcaagaact cgtcgtacac gcagatccccg 660
 tacgtctacg cgctctcatc caagagctac tgcacgcgcg tcctctgccc gcagcacgcg 720
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 gcgcacccgc agatcgtcgc ggccgtgctc aaggacctgc aggcgcagtg caaggcggcc 840
 aagctcgcgg gcttcgagac gccgagcaag ctcatcctcg tgtcggacga gtggaccgtt 900
 gagaatgaca tgctcaccac gacgatgaag atcaagcgca agccaatcgc tgaccggcac 960
 gcgagcgaga tcaaaggccgt ttacgtctga gcccgcgctt tttgtacaa cctcgagagc 1020
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 ttgaacgcaa ggcaggcgca aggcgcggga gggattgctg gggatggcgg ctgccgcagt 1140
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 cagcccctcc ccctcgggc ggctgccatt cggggcagcg ctcgcacatg tgctgcgctc 1260
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 aacgaccgtt gccctcgcac 1340

<210> 13
 <211> 329
 <212> PRT
 <213> Pavlova lutherii

<400> 13

Ala Arg Gly Leu Phe Gly Trp Ala Leu Asp Asp Ala Leu Ala Lys Tyr
 1 5 10 15

Asp Lys Gly Gly Val Gly Pro Gly Phe Leu Tyr Asn Ala Val Val Phe
 20 25 30

Ser Ser Val Gln Ala Leu Leu Gly Gly Arg Val Arg Met Met Val Ala
 35 40 45

Gly Ser Ala Pro Leu Ser Ala Asp Val Gln Lys Phe Val Gln Ser Cys
 50 55 60

Phe Asn Ala Pro Leu Arg Gln Gly Tyr Gly Leu Thr Glu Thr Cys Ala
 65 70 75 80

Ala Thr Thr Leu Cys Ala Leu His Asp Asn Thr Pro Ser Gln Val Gly
 85 90 95

Pro Pro Gln Glu Ser Ala Cys Ile Thr Leu Arg Asp Trp Glu Glu Gly
 100 105 110

Asn Tyr Arg Asn Arg Asp Ala Asn Asp Pro Ala Ile Gly Met Arg Arg
 115 120 125

Gly Glu Ile Leu Ile Gly Gly Pro Ala Val Cys Leu Gly Tyr Tyr Val
 130 135 140

Asn Glu Arg Ala Pro Asp Ala Asp Val Val Lys Arg Asn Ala Glu Asp
 145 150 155 160

Phe Val Thr Ile Asn Gly Met Arg Phe Phe Cys Ser Gly Asp Ile Gly
 165 170 175

Gln Ile Thr Pro Ser Gly Cys Val Gln Ile Ile Asp Arg Lys Lys Asp
 180 185 190

Leu Val Lys Leu Gln Gln Gly Glu Tyr Val Ala Leu Ser Lys Val Glu
 195 200 205

Asn Ala Leu Lys Asn Ser Ser Tyr Thr Gln Ile Pro Tyr Val Tyr Ala
 210 215 220

Leu Ser Ser Lys Ser Tyr Cys Ile Ala Leu Leu Cys Pro Gln His Ala
 225 230 235 240

Ala Ile Arg Gln Leu Ala Ala Ser Leu Gln Ile Ser Gly Lys Glu Leu
 245 250 255

Ser Glu Leu Cys Ala His Pro Gln Ile Val Ala Ala Val Leu Lys Asp
 260 265 270

Leu Gln Ala Gln Cys Lys Ala Ala Lys Leu Ala Gly Phe Glu Thr Pro

275		280		285
Ser Lys Leu Ile Leu Val	Ser Asp Glu Trp Thr	Val Glu Asn Asp Met		
290	295	300		
Leu Thr Thr Thr Met	Lys Ile Lys Arg Lys	Pro Ile Ala Asp Arg His		
305	310	315	320	
Ala Ser Glu Ile Lys	Ala Val Tyr Val			
	325			

<210> 14
 <211> 1099
 <212> DNA
 <213> Pavlova lutherii

<400> 14
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 gttccactgg aaggtgacgc tgccgctgct cgccctttat ctcgcgctcgt acctcgacgg 180
 cgccgaggtg cgcgtcaagc gcgtgcgcgc gtggccggcg ttctcccggc atttttggct 240
 gttcacgttc atgcgcaggg tctaccggca gcgcgttcac gtgccagctg gcctcgaggc 300
 cgaggagcag atcatcctag cgctgcatcc gcacggctcg atggcggact accgcgcgat 360
 cctcgacggc cagctgctcg acctactgcc cgcgctgcgc ggcaagatgc gctggctcgc 420
 ggcgagcgtg ctctttcggc ttcccatcgt gcgcgagctc accctttgga ccggtgcgat 480
 cgacgcgcgc cgctcggttg ccgagagtgc gctgcgtggc ggctactcag tcggcgctact 540
 gcccggcggc gagcaggagc agctgcgcac gcgctacggg cgcgagtcgg tatatttgcg 600
 caagcgcttt ggcttcgtca agcttgcgct ccgcttcggc gtgccgctcg tgctgggta 660
 cgtgttcggg tgcgtcgacc tgtaccacac ttcattccctg ctcttctcgg cgcgcgagtg 720
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 ggcgccgctt gctgtgccgc tcaacgtcgt gatcggccgg ccgatcaagc tgccgcgcaa 840
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 cgcgctcttt gacgagaaca aggcgcgctt tggctatgcc gaccgcgagc tggaggtgtg 960
 ctgattgtga agaagtgtca ttgaaggtcg gcgtcagcag gcgcaccgcg caccaagcca 1020
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cagaaaaaaaa aaaaaaaaaa

1099

<210> 15
<211> 315
<212> PRT
<213> Pavlova lutherii

<400> 15

Met Ala Ala Arg Ala Val Asp Ala Leu Val Val Ser Ala Phe Thr Ala
1 5 10 15

Phe Val Gln Ile Gly Val Trp Ala Leu Thr Pro Val Gly Ile Ala Trp
20 25 30

Ala Leu Ala Phe His Trp Lys Val Thr Leu Pro Leu Leu Ala Leu Tyr
35 40 45

Leu Ala Ser Tyr Leu Asp Gly Ala Glu Val Arg Val Lys Arg Val Arg
50 55 60

Ala Trp Pro Ala Phe Ser Arg His Phe Trp Leu Phe Thr Phe Met Arg
65 70 75 80

Arg Val Tyr Arg Gln Arg Val His Val Pro Ala Gly Leu Glu Ala Glu
85 90 95

Glu Gln Ile Ile Leu Ala Leu His Pro His Gly Ser Met Ala Asp Tyr
100 105 110

Arg Ala Ile Leu Asp Gly Gln Leu Leu Asp Leu Leu Pro Ala Leu Arg
115 120 125

Gly Lys Met Arg Trp Leu Ala Ala Ser Val Leu Phe Arg Leu Pro Ile
130 135 140

Val Arg Glu Leu Thr Leu Trp Thr Gly Cys Ile Asp Ala Arg Arg Ser
145 150 155 160

Val Ala Glu Ser Ala Leu Arg Gly Gly Tyr Ser Val Gly Val Leu Pro
165 170 175

Gly Gly Glu Gln Glu Gln Leu Arg Thr Arg Tyr Gly Arg Glu Ser Val
180 185 190

Tyr Leu Arg Lys Arg Phe Gly Phe Val Lys Leu Ala Leu Arg Phe Gly
 195 200 205

Val Pro Leu Val Pro Gly Tyr Val Phe Gly Cys Val Asp Leu Tyr His
 210 215 220

Thr Ser Ser Leu Leu Phe Ser Ala Arg Glu Trp Leu Val Arg Ser Leu
 225 230 235 240

Gly Val Cys Val Pro Val Cys Phe Gly Ala Trp Gly Val Pro Met Ala
 245 250 255

Pro Leu Ala Val Pro Leu Asn Val Val Ile Gly Arg Pro Ile Lys Leu
 260 265 270

Pro Arg Asn Pro Glu Pro Thr Asp Glu Asp Val Ala Arg Ala Leu Asp
 275 280 285

Gln Tyr Ile Ala Ala Leu Arg Ala Leu Phe Asp Glu Asn Lys Ala Arg
 290 295 300

Phe Gly Tyr Ala Asp Arg Glu Leu Glu Val Cys
 305 310 315

<210> 16
 <211> 2061
 <212> DNA
 <213> Pavlova lutherii

<400> 16
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 agggcgtgca cccgctcggt attcacagct cgcagatcct cgccgccgcg ctgctcgta 180
 cggccgccgt caaccacttt cccaagatca ccgtcgcgga cctcgccgag atctggcgct 240
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 gctactacgc tctccgccac ccgcgccccg tctacctcgt cgacttcgcc acgtggcagc 360
 tgcgcgacga caaggacgac ggcagcctga gtgcgacgag cgatttcttc cgctcgacga 420
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 gcaaccagat ctccgagcgc tgctacttcc cacctggcat ccgcgcctac cgcaagggcg 540

agcgcgactt tgacttttcg atggccgccc cgcgcaagga gttcgagact gtcgtcttca	600
cgaccgtcga cgagctgctc gccaaagacgg gcgtaaagcc gcgagatata gacatcctcg	660
tcgtcaactg ctgctcttc aacccgacgc catcgctggc tgcgatcgtg atcaaccact	720
accagatgaa ggactccgta cagagctact cacttggcgg gatgggttgc tcagcgggac	780
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tctcgaacac gctcttccga atggggcgcg ccgccgtcct cctctccggc cgccacgccg	960
accggcgcggt cgccaagtat caactgctgc acaccgtccg cacgcacaag ggcgcgggacc	1020
cggacgcgta ccggtgcgtc ttccaggagg aggacaaggc ggggcacgtg ggcgtgcgcc	1080
tgtcgaaaga cgtgatggag tgcgcccggc ccgcatgaa gaccaacatc tccgtcctcg	1140
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agtggctgcg aatgaaaggc gtgaagggat acgtgccgga cttcacaacg gccgtgcagc	1260
acttttgcac ccacacgggc gggcgcgcgg tgctcgacgc gctgcaggcg aacttgctgc	1320
tctcagatta ctacctcgag ccgagccgtt actccctgtg gcgctggggt aacgtctcaa	1380
ggcctcagt ctggtacgag ctcgactggc tcgaaaagtc cggccgcata cggcggggcg	1440
acaaggtgtg gcagattggg ttgggcagcg gcttcaagtgc caactcggcc gtctggcggg	1500
cgtgccgagc gatgccctag ctacgccggc gccgtccgca ttgccagtgg ttcgtgacag	1560
acagtcacac tgacgagtgc ggagtgcgt ctgacgcctt ccccccccg cccaccacct	1620
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gcacggacgc gaagcggaag aagagccaca tcacagcaga aaaaaaaaaa aaaaaaaact	1800
cgagactagt tctctctacc gcgctgccga gctcaagcac ggccgctgt gcatgctcgc	1860
cgtcaccggc atgcttgtcc aggaggtgta ctgctggccg gcacccgacg gcgtcttcaa	1920
ggcgccgacg ccgctcggcg cgtctctgac cgtgccggcg ctcggcctca tccagctcat	1980
cgtcttctc ggcatcatcg aggtgcgctc ggcgaactac cagggccgcg tgcccggcga	2040
ccttggttt gaccgctcg g	2061

<210> 17
 <211> 501
 <212> PRT
 <213> Pavlova lutherii

<400> 17

Met Ala Ala Pro Thr Ser Pro Tyr Gly Ala Glu Ser Pro Arg Ala Ala
1 5 10 15

Tyr Ala Tyr Pro Glu Arg Ala Asn Val Lys Met Ser Glu Ala Leu Arg
20 25 30

Val Leu Asp Glu Gly Val His Pro Leu Val Ile His Ser Ser Gln Ile
35 40 45

Leu Ala Ala Ala Leu Leu Val Thr Ala Ala Val Asn His Phe Pro Lys
50 55 60

Ile Thr Val Ala Asp Leu Ala Glu Ile Trp Arg Ser Leu Gln Ile Asp
65 70 75 80

Val Ala Tyr Ala Phe Ala Leu Thr Ala Val Ala Val Leu Leu Leu Gly
85 90 95

Tyr Tyr Ala Leu Arg His Pro Arg Pro Val Tyr Leu Val Asp Phe Ala
100 105 110

Thr Trp Gln Leu Arg Asp Asp Lys Asp Asp Gly Ser Leu Ser Ala Thr
115 120 125

Ser Asp Phe Phe Arg Ser Thr Ile Thr Asp Cys Gly Asn Phe Cys Asp
130 135 140

Glu Ser Val Asp Phe Gln Met Lys Leu Phe Glu Arg Asn Gln Ile Ser
145 150 155 160

Glu Arg Cys Tyr Phe Pro Pro Gly Ile Arg Ala Tyr Arg Lys Gly Glu
165 170 175

Arg Asp Phe Asp Phe Ser Met Ala Ala Ala Arg Lys Glu Phe Glu Thr
180 185 190

Val Val Phe Thr Thr Val Asp Glu Leu Leu Ala Lys Thr Gly Val Lys
195 200 205

Pro Arg Asp Ile Asp Ile Leu Val Val Asn Cys Ser Leu Phe Asn Pro
210 215 220

Thr Pro Ser Leu Ala Ala Ile Val Ile Asn His Tyr Gln Met Lys Asp
 225 230 235 240

Ser Val Gln Ser Tyr Ser Leu Gly Gly Met Gly Cys Ser Ala Gly Leu
 245 250 255

Ile Ser Ile His Leu Ala Lys Asp Leu Leu Gln Val Tyr Pro Arg Lys
 260 265 270

Arg Ala Leu Val Ile Ser Thr Glu Asn Ile Thr Gln Asn Phe Tyr Gln
 275 280 285

Gly Asn Glu Lys Ser Met Leu Ile Ser Asn Thr Leu Phe Arg Met Gly
 290 295 300

Gly Ala Ala Val Leu Leu Ser Gly Arg His Ala Asp Arg Arg Val Ala
 305 310 315 320

Lys Tyr Gln Leu Leu His Thr Val Arg Thr His Lys Gly Ala Asp Pro
 325 330 335

Asp Ala Tyr Arg Cys Val Phe Gln Glu Glu Asp Lys Ala Gly His Val
 340 345 350

Gly Val Arg Leu Ser Lys Asp Val Met Glu Cys Ala Gly Ala Ala Met
 355 360 365

Lys Thr Asn Ile Ser Val Leu Ala Pro Leu Ile Leu Pro Val Ser Glu
 370 375 380

Gln Val Arg Phe Leu Ala Asn Tyr Val Ala Arg Lys Trp Leu Arg Met
 385 390 395 400

Lys Gly Val Lys Gly Tyr Val Pro Asp Phe Thr Thr Ala Val Gln His
 405 410 415

Phe Cys Ile His Thr Gly Gly Arg Ala Val Leu Asp Ala Leu Gln Ala
 420 425 430

Asn Leu Ser Leu Ser Asp Tyr Tyr Leu Glu Pro Ser Arg Tyr Ser Leu
 435 440 445

Trp Arg Trp Gly Asn Val Ser Ser Ala Ser Val Trp Tyr Glu Leu Asp
 450 455 460

Trp Leu Glu Lys Ser Gly Arg Ile Arg Arg Gly Asp Lys Val Trp Gln
 465 470 475 480

Ile Gly Phe Gly Ser Gly Phe Lys Cys Asn Ser Ala Val Trp Arg Ala
 485 490 495

Cys Arg Ala Met Pro
 500

<210> 18
 <211> 1113
 <212> DNA
 <213> Pavlova lutherii

<400> 18
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 cgacgagttt gtcgatgggc tttcgttcgt cgaccgcgag aagatcggcg tgcacatggt 120
 cgaccagggc gtgattacct ctgcggagtg ggcggccatc tcggtcgaca agcacatgtc 180
 cttcttctcc gacgcggccg agttcacggg cgaccactgg atcatcccg ctcgtcgcggt 240
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 ccccgatgaat gggctcgcct gcgcgtggaa ctgggttcctg gccgcattca gcactttcgg 360
 cgtggcttgc acgtggcact gtatcttcac caggctgcgt agccgcggct tcgagagcac 420
 gacgtgcggc agcgccatgt tcatgtcgca ggggtacgtt ggcttggcaa tgctgctctt 480
 catctactcc aagctcttcg agttgatcga caccttcttc ctcatcgca agaaggcgga 540
 tgtgatcttc ctgcattggt accaccacgt caccgtgctg ctctactgct ggcaactcgca 600
 ctcgggtccg ataccgagcg ggatctggtt cgccgcgatg aactactttg tgcacgccat 660
 catgtactcc tactttgcga tgacgcagat gggctccgcg taccgcaagc tcgtccggcc 720
 gtacgcgcgg ctgattacga ccctgcagat ctcgcagatg ttcgtcggcc tcatcgtcaa 780
 cggctcgatc atttacttca cgtcgtcgcg gcacgcatgc aagtcgagca agacgaacac 840
 gatcctgagc tggctgatgt acctcagcta ctttgtgcta ttcggactgc tctacctgcg 900
 caattacatc cttggtacac atggcaagcc ggcgggcaag cgcgcaaagg gcaaggcgga 960
 atagtgcagg ggccggggag gcggtgccca cccgcgctcg caaagcggtc gcgctccttg 1020

ccgagatgcg acgagagtcg aagaggtgaa acctccttaa aataatgcta ctcctagatt 1080
 ttcgctttgt gcttccgtat agatgggtcaa gcc 1113

<210> 19
 <211> 320
 <212> PRT
 <213> Pavlova lutherii

<400> 19

His Glu Ala Ser Cys Arg Ile Arg His Glu Ala Ala Leu Trp Ser Trp
 1 5 10 15

Leu Pro Thr Tyr Asp Glu Phe Val Asp Gly Leu Ser Phe Val Asp Arg
 20 25 30

Glu Lys Ile Gly Val His Met Val Asp Gln Gly Val Ile Thr Ser Ala
 35 40 45

Glu Trp Ala Ala Ile Ser Val Asp Lys His Met Ser Phe Phe Ser Asp
 50 55 60

Ala Ala Glu Phe Thr Gly Asp His Trp Ile Ile Pro Leu Val Ala Val
 65 70 75 80

Ala Leu Tyr Leu Val Met Ile Val Val Gly Pro Met Ile Met Ala Asn
 85 90 95

Arg Pro Pro Leu Pro Val Asn Gly Leu Ala Cys Ala Trp Asn Trp Phe
 100 105 110

Leu Ala Ala Phe Ser Thr Phe Gly Val Ala Cys Thr Trp His Cys Ile
 115 120 125

Phe Thr Arg Leu Arg Ser Arg Gly Phe Glu Ser Thr Thr Cys Gly Ser
 130 135 140

Ala Met Phe Met Ser Gln Gly Tyr Val Gly Leu Ala Met Leu Leu Phe
 145 150 155 160

Ile Tyr Ser Lys Leu Phe Glu Leu Ile Asp Thr Phe Phe Leu Ile Ala
 165 170 175

Lys Lys Ala Asp Val Ile Phe Leu His Trp Tyr His His Val Thr Val

